CALIFORNIA DEPARTMENT OF FISH AND GAME
ENVIRONMENTAL SERVICES DIVISION
STREAM FLOW AND HABITAT EVALUATION PROGRAM

CENTRAL VALLEY ANADROMOUS FISH-HABITAT EVALUATIONS

Sacramento and American river investigations
October 1995 through September 1996

Annual Progress Report
Prepared for
U.S. Fish and Wildlife Service
Central Valley Anadromous Fish Restoration Program

January 1997

Trap Efficiency

Trap efficiency, measured as the percent of marked fish recaptured, was evaluated during 18 of the 30 weeks (Table 14). A total 3,249 salmon were marked and 50 were recaptured for an overall trap efficiency of 1.54%. Weekly efficiency ranged from 0.00 (4 weeks) to 7.6% during Week 32.

LOWER AMERICAN RIVER EMIGRATION SURVEY

Emigration from the lower American River was monitored using a single rotary screw trap (8 ft diameter) located just downstream of the Watt Avenue Bridge (RM). The trap was fished continuously from October 1995 (Week 40) through September (Week 39). Data were acquired as described above for the upper Sacramento River emigration survey.

Emigration Results

Chinook Salmon

The first juvenile chinook salmon was collected during Week 48 (beginning 29 November 1995) (Table 15, Figure 25). Salmon were then caught in every week from Week 50 through Week 25 (ending 23 June 1996). One salmon was caught in Week 27 and two were caught in Week 29.

Salmon capture rates were 0 for Weeks 49, 26 and 28. Catch rates exceeded 100 fish/h during Weeks 4 through 7), and they exceeded 50 fish/h seven weeks out of 10 between 1 January and 1 March 1996.

Total catch ranged up to 28,423 salmon during Week 4 and 25,484 salmon during Week 5 (Figure 26). Recently emerged-sized salmon (FL <45 mm FL) dominated the catches from Week 51 through Week 16. Smolt-sized salmon, from the 1996 brood year, first appeared in the catch in Week 13; the last emergent-sized salmon appeared during Week 17.

Steelhead Trout

The first juvenile steelhead caught were three yearling-sized trout caught during Week 3 (Table 16, Figure 27). Young-of-the-year (YOY) steelhead were first caught during Week 11 (Table 16). A total 125 YOY and 19 "older" (up to 457 mm FL) steelhead were caught through September (Week 40).

TABLE 14. Results of rotary screw trap efficiency evaluations conducted with marked chinook salmon during the upper Sacramento River emigration survey, 22 March - 5 October 1996.

Week	Number marked	Number recaptured	Efficiency
12	0	-	-
13	415	7	1.69
14	496	0	0
15	157	2	1.27
16	67	1	1.49
17	62	0	0
18	226	2	0.88
19	Algae problems - no fish marked		
20	Algae problems - no fish marked		
21	Algae problems - no fish marked		
22	32	1	3.13
23	Algae problems - no fish marked		
24	Algae problems - no fish marked		
25	Algae problems - no fish marked		
26	Algae problems - no fish marked		
27	Algae problems - no fish marked		
28	Algae problems - no fish marked		
29	Algae problems - no fish marked		
30	44	0	0
31	102	4	3.92
32	144	11	7.64
33	129	3	2.33
34	237	2	0.84
35	558	9	1.61
36	155	5	3.23
37	Algae problems - no fish marked		
38	21	0	0
39	93	0	0
40	311	3	0.96
Total	3,249	50	1.54

TABLE 15. Summary of catch data and size statistics for chinook salmon collected by rotary screw trap in the lower American River, October 1995 through September 1996.

Week	Number caught	Catch/h	Size (FL in mm) Mean	Minimum	Maximum	SD
48	1	0.009	29.0	-	-	-
49	0	0.000				
50	10	0.060	43.5	25.0	92.0	23.50
51	135	1.087	35.0	28.0	77.0	9.65
52	155	1.370	33.8	29.0	37.0	1.27
1	510	4.140	34.2	28.0	40.0	1.91
2	1,765	10.568	35.1	28.0	43.0	1.91
3	9,508	57.105	35.8	31.0	62.0	1.57
4	28,423	163.821	35.9	30.0	54.0	1.62
5	25,484	153.703	36.7	30.0	46.0	1.84
6	19,291	114.691	36.5	29.0	49.0	1.77
7	16,152	112.323	36.6	31.0	47.0	1.92
8	10,497	63.618	36.3	30.0	51.0	1.81
9	4,597	27.527	36.9	30.0	54.0	2.39
10	7,757	65.295	37.1	30.0	52.0	2.56
11	5,280	31.150	37.9	28.0	56.0	3.35
12	1,125	6.757	37.6	31.0	65.0	4.10
13	247	2.815	40.8	33.0	74.0	6.80
14	529	3.574	40.6	32.0	80.0	7.99
15	81	0.477	52.8	35.0	70.0	11.34
16	62	0.330	49.8	34.0	83.0	9.54
17	15	0.103	57.9	45.0	85.0	10.84
18	53	0.317	63.5	47.0	98.0	9.96
19	159	0.603	66.8	48.0	87.0	8.71
20	43	0.691	na			
21	25	0.143	76.2	66.0	89.0	5.39
22	78	0.667	76.0	60.5	91.0	5.65
23	33	0.191	81.3	66.0	89.5	5.19
24	17	0.124	80.6	64.0	93.5	6.26
25	4	0.022	85.6	79.0	95.0	6.55
26	0	0.000				
27	1	0.006	88.0	-	-	-
28	0	0.000				
29	2	0.014	88.3	81.0	95.0	7.25
Total	132,039	20.173	37.3	25.00	98.0	5.93

TABLE 16. Summary of catch data for steelhead trout collected by rotary screw trap in the lower American River, October 1995 - September 1996.

Week	Number caught	Size (FL in mm)			
		Mean	Minimum	Maximum	SD
3	3	299.3	196.9	457.2	113.30
4	4	282.1	210.8	384.0	66.40
5	0				
6	0				
7	0				
8	0				
9	0				
10	0				
11	4	54.2	26.0	131.0	44.40
12	9	57.4	26.0	280.0	76.70
13	3	29.3	26.0	35.0	4.05
14	9	30.9	25.0	42.0	6.50
15	0				
16	12	38.8	26.0	52.0	8.92
17	13	36.3	26.0	49.0	7.89
18	5	35.4	28.0	46.0	8.26
19	5	56.8	49.0	67.0	6.21
20	15	54.3	41.0	69.0	8.13
21	10	46.2	22.0	61.0	10.16
22	19	51.1	31.5	76.0	8.59
23	7	61.1	56.0	74.0	6.03
24	1	63.0			
25	1	77.5			
26	0				
27	0				
28	5	132.7	68.0	341.0	104.97
29	8	88.9	69.0	115.0	16.24
30	8	104.6	85.0	128.0	15.36
31	3	94.2	89.8	100.5	4.64
32	2	214.0	106.0	322.0	108.00
33	1	342.0			
34	1	123.0			
35	0				
36	0				
37	1	162.0			
38	0				
39	0				
40	0				
Total	149		22.00	457.0	

Chinook salmon catch rate versus rotary screw trap effort - lower American River 1995-1996

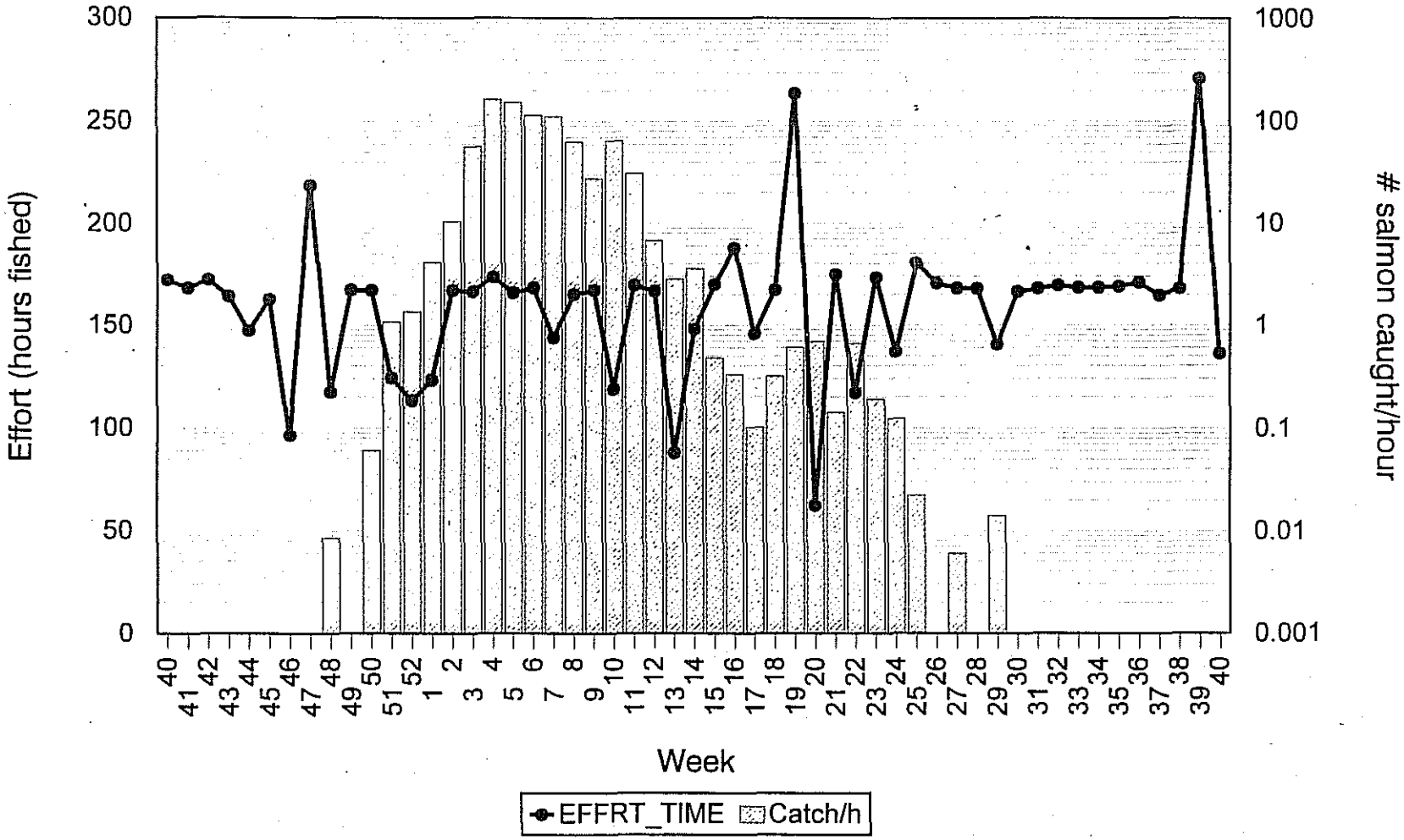

Figure 25. Weekly chinook salmon catch rate versus hours fished by rotary screw trap in the lower American River - October 1995 through September 1996.

Chinook salmon size statistics and weekly catch during the 1995 - 1996 lower American River emigration survey

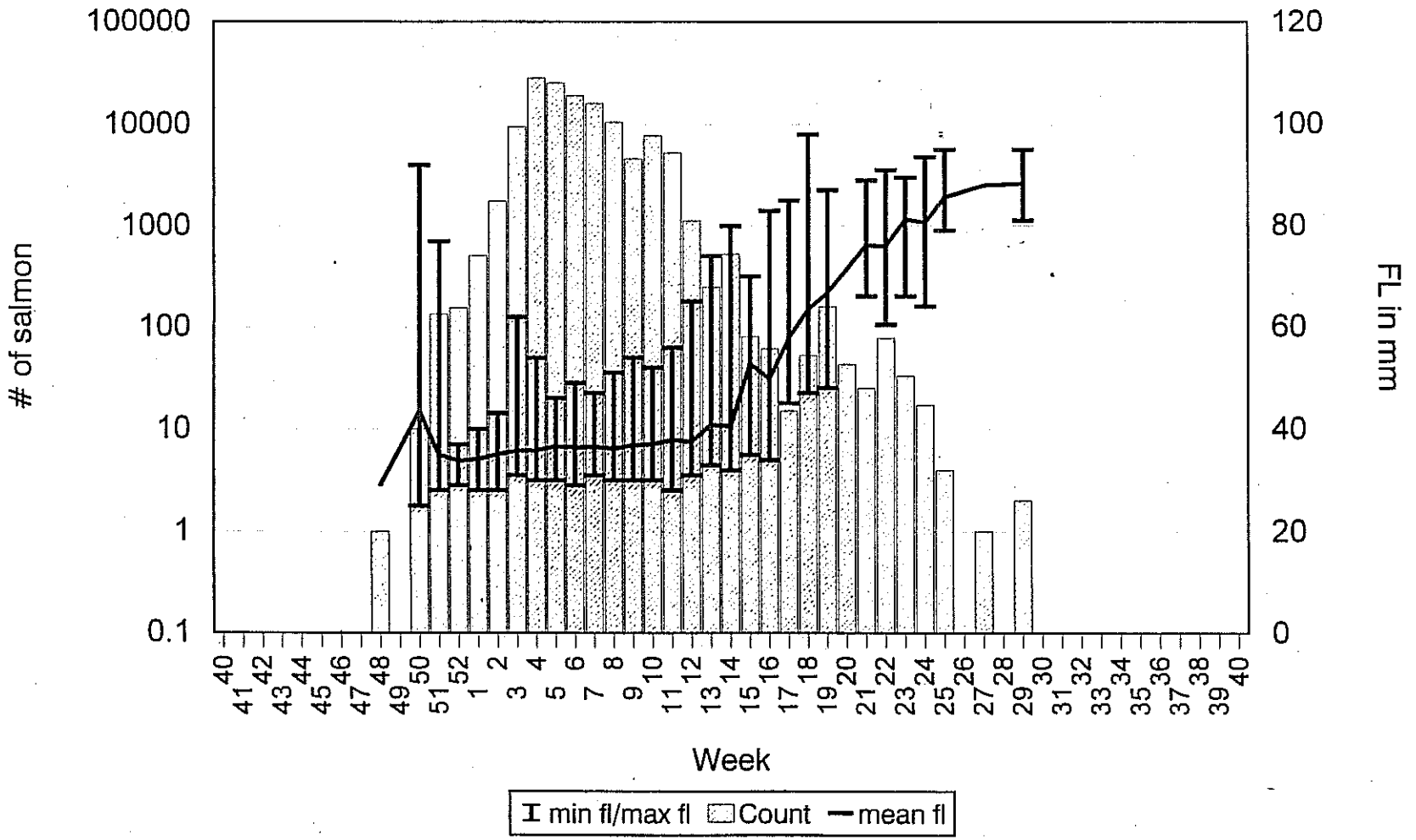

Figure 26. Weekly catch and size statistics for chinook salmon collected by rotary screw trap in the lower American River, October 1995 through September 1996.

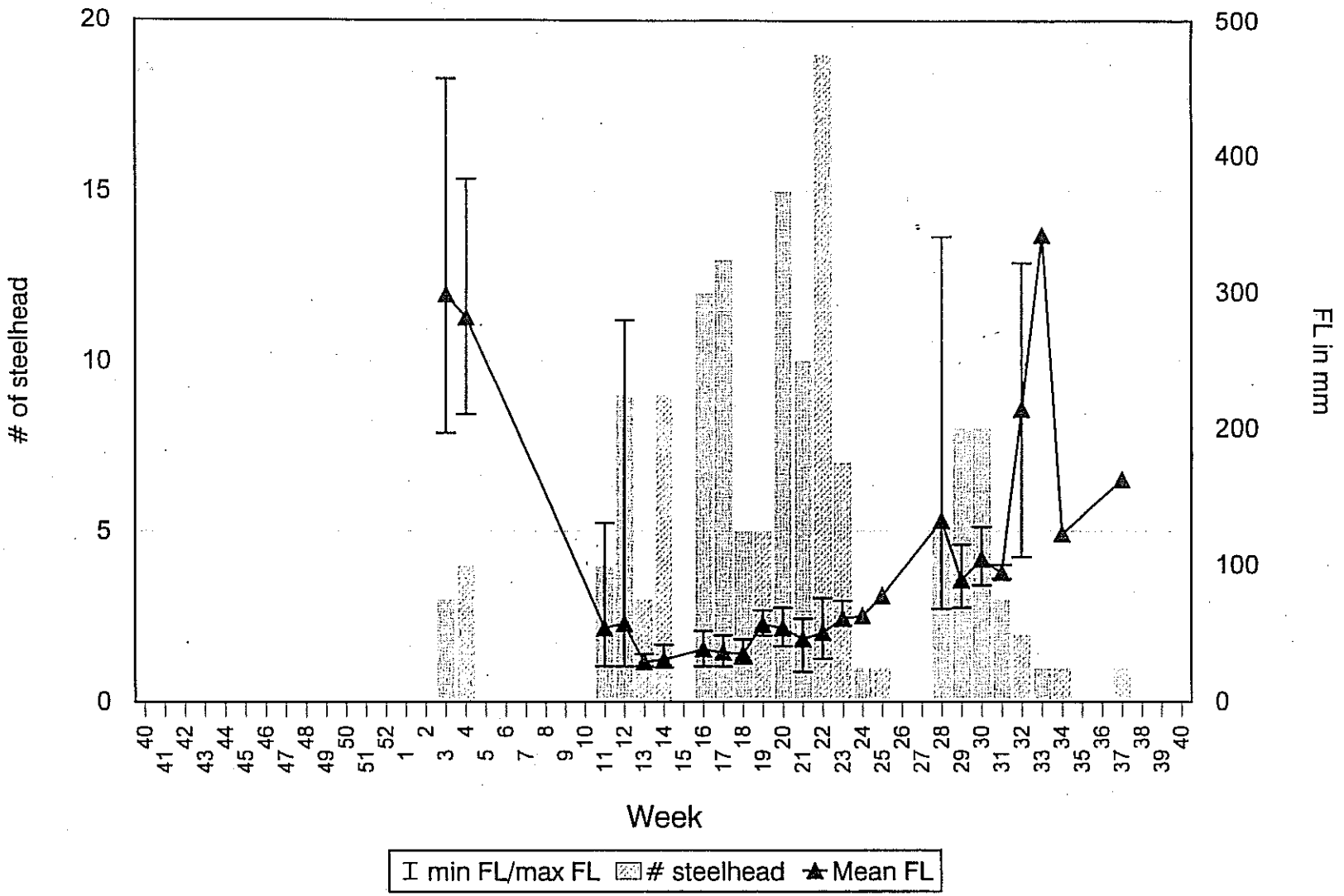

Figure 27. Mean fork length and size range of steelhead caught by rotary screw trap during the lower American River emigration survey, October 1995 through September 1996.